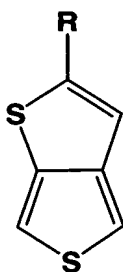


CLAIMS

We claim:

1. A film comprising conducting polymer applied from a dispersion containing particles having a particle size of less than 450 nm, wherein the conducting polymer comprises substituted or unsubstituted, uncharged or charged polymerized units of thieno[3,4-b]thiophene, and wherein a film drop cast from the dispersion has a conductivity from 10^{-1} to 10^{-6} S/cm measured using the four point probe method.
2. The film of claim 1 wherein said particle size is less than 200 nm.
3. The film of claim 1 wherein said film has a conductivity of from 10^{-2} to 10^{-6} S/cm.
4. The film of claim 1 wherein said film has a conductivity of from 10^{-2} to 10^{-5} S/cm.
5. The film of claim 2 wherein said film has a conductivity of from 10^{-2} to 10^{-6} S/cm.
6. The film of claim 2 wherein said film has a conductivity of from 10^{-2} to 10^{-5} S/cm.
7. The film of claim 1 wherein the conducting polymer comprises substituted or unsubstituted, uncharged or charged polymerized units of



(I)

- where R is hydrogen, substituted or unsubstituted (C₁-C₁₈)-alkyl, preferably (C₁-C₁₀)-alkyl, in particular (C₁-C₆)-alkyl, for example, *t*-butyl, (C₃-C₇)-cycloalkyl, (C₁-C₁₈)-alkyloxy, preferably (C₁-C₁₀)-alkyloxy, or (C₂-C₁₈)-alkyloxy ester, phenyl and substituted phenyl, SF₅.

8. A dispersion comprising conducting polymer containing particles having a particle size of less than 450 nm, wherein the conducting polymer comprises substituted or

unsubstituted, uncharged or charged polymerized units of thieno[3,4-b]thiophene, and wherein a film drop cast from the dispersion has a conductivity from 10^{-1} to 10^{-6} S/cm measured using the four point probe method.

5 9. The dispersion of claim 8 wherein said particle size is less than 200 nm.

10. The dispersion of claim 8 wherein said film has a conductivity of from 10^{-2} to 10^{-6} S/cm.

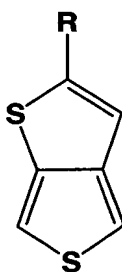
10 11. The dispersion of claim 8 wherein said film has a conductivity of from 10^{-2} to 10^{-5} S/cm.

12. The dispersion of claim 9 wherein said film has a conductivity of from 10^{-2} to 10^{-6} S/cm.

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13. The dispersion of claim 9 wherein said film has a conductivity of from 10^{-2} to 10^{-5} S/cm.

14. The dispersion of claim 8 wherein the conducting polymer comprises substituted or
20 unsubstituted, uncharged or charged polymerized units of



(I)

where R is hydrogen, substituted or unsubstituted (C_1 - C_{18})-alkyl, preferably (C_1 - C_{10})-alkyl, in particular (C_1 - C_6)-alkyl, for example, *t*-butyl, (C_3 - C_7)-cycloalkyl, (C_1 - C_{18})-alkyloxy, preferably (C_1 - C_{10})-alkyloxy, or (C_2 - C_{18})-alkyloxy ester, phenyl and substituted phenyl,
25 SF_5 .

15. An optoelectronic device comprising a film comprising conducting polymer applied from a dispersion containing particles having a particle size of less than 450 nm, wherein

the conducting polymer comprises substituted or unsubstituted, uncharged or charged polymerized units of thieno[3,4-b]thiophene, and wherein a film drop cast from the dispersion has a conductivity from 10^{-1} to 10^{-6} S/cm measured using the four point probe method.

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16. The optoelectronic device of claim 15 wherein said device is selected from the group consisting of a light emitting diode, a photovoltaic device, and a laser diode.

17. The optoelectronic device of claim 15 wherein said film is a hole injection layer.

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18. The optoelectronic device of claim 15 wherein said film is a hole transport layer.

19. The optoelectronic device of claim 15 wherein said film is a hole injection and hole transport layer.

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20. The optoelectronic device of claim 15 wherein said film has a conductivity of from 10^{-2} to 10^{-6} S/cm.

21. The optoelectronic device of claim 15 wherein said film has a conductivity of from

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10^{-2} to 10^{-5} S/cm.